

WHAT IS CLAIMED IS:

1. A multi clock deciding system comprising:
 - a master clock deciding apparatus (master) configured to output a system clock signal; and
 - a slave clock deciding apparatus (slave) configured to generate a plurality of clock signals by delaying a reference clock signal, and to output a clock signal selected from the plurality of clock signals having a minimum phase difference from the system clock, wherein the output of the master is inputted into the slave.
2. The system of claim 1, further comprising:
 - a plurality of slave clock deciding apparatuses (slaves); and
 - a multi clock selecting unit configured to receive the clock signals of the respective clock deciding apparatuses and supplying the system clock signal to the respective clock deciding apparatuses.
3. The system of claim 2, wherein the multi clock selecting unit outputs one of the slave clock outputs if there is an error on the clock signal of the master.
4. The system of claim 2, wherein each clock deciding apparatus comprises:
 - a phase locked loop (PLL) circuit configured to receive the reference clock signal;
 - a signal delay unit configured to delay a P-clock signal outputted from the PLL circuit to generate a plurality of delay clock signals;

a multiplexer configured to select and to output one of the delay clock signals;

a phase comparing unit configured to detect an R-clock signal having the smallest phase difference from the system clock signal among the delay clock signals;

an error detecting unit configured to detect an error on the reference clock signal and the system clock signal;

a control unit configured to output a select control signal by referring to the result of the error detecting unit and an outer control signal; and

a clock selecting unit configured to control the multiplexer by referring to the output of the phase comparing unit according to the select control signal.

5. The system of claim 4, wherein the clock selecting unit controls the multiplexer so as to output the P-clock signal when the control signal decides that the clock deciding apparatus is the master, and controls the multiplexer so as to output the R-clock signal if the control signal decides that the clock deciding apparatus is the slave.

6. The system of claim 4, wherein the clock deciding apparatus outputs the P-clock signal when an error is detected on the system clock signal.

7. The system of claim 4, wherein the signal delay unit comprises a plurality of signal delay elements.

8. The system of claim 4, wherein the delay clock signals have different delayed time from those of each other.

9. The system of claim 4, wherein the phase comparing unit detects the R-clock signal by comparing rising edge of the system clock signal to rising edge points of the respective delay clock signals.

10. The system of claim 4, wherein the clock deciding apparatus generates the clock signal having a phase difference as much as an offset value with the system clock signal referring to the offset value.

11. The system of claim 10, wherein the offset value is variable.

12. The system of claim 1, wherein the slave is configured to:
convert the frequency of the reference clock into the frequency used in the system;
generate a plurality of delay clock signals by delaying the converted reference clock signal (P-clock signal) for a predetermined time;
compare a phase of the system clock signal to phases of the respective delay clock signals; and
select and output one the delay clock signals having the smallest phase difference from the system clock signal by referring to the phase comparison result.

13. The system of claim 12, wherein comparing phases compares the rising edges of the system clock signal and of the respective delay clock signals.

14. The system of claim 12, wherein the slave is further configured to detect an error on the reference clock signal and/or the system clock signal.

15. The system of claim 14, wherein the slave outputs the P-clock signal when the error is detected on the system clock signal.

16. The system of claim 1, wherein the output of the slave is inputted into the master

17. A multi clock selecting method comprising:

generating a first output clock signal; and

generating a second output clock signal by:

generating a plurality of delay clock signals by delaying a reference clock signal, and

selecting one of the delay clock signals having a minimum phase difference from the first clock signal as the second clock signal.

18. The method of claim 17, further comprising:

generating at least one addition output clock signal by:

generating a plurality of delay clock signals by delaying a reference clock signal, and
selecting one of the delay clock signals having a minimum phase difference from the first clock signal as at least one additional clock;
receiving the output clock signals in a selecting unit; and
supplying a system clock signal from the selecting unit to respective clock devices that generate the output clock signals.

19. The method of claim 18, further comprising:
supplying one of the second and at least one additional output clock signals as the system clock signal if there is an error on the first output clock signal.

20. The method of claim 18, wherein the each output clock signal of each clock device is generated by:

generating a P-clock signal by inputting the reference clock signal into a phase locked loop (PLL) circuit;
delaying the P-clock signal to generate the plurality of delay clock signals;
detecting an R-clock signal having the smallest phase difference from the system clock signal among the delay clock signals;
outputting a select control signal based on detecting an error on the reference clock signal and/or the system clock signal and an outer control signal; and
selecting the output clock signal according to the select control signal.

21. The method of claim 20, wherein selecting the output clock signal comprises:
outputting the P-clock signal if the control signal indicates that the clock device is a master; and
outputting the R-clock signal if the control signal indicates that the clock device is a slave.
22. The method of claim 20, further comprising:
outputting the P-clock signal when an error is detected on the system clock signal.
23. The method of claim 20, wherein the plurality of delay clock signals is generated by a plurality of signal delay elements.
24. The method of claim 20, wherein the delay clock signals each have different delay times.
25. The method of claim 20, wherein the R-clock signal is detected by comparing a rising edge of the system clock signal to rising edges of the delay clock signals.
26. The method of claim 17, wherein generating the second output clock signal further comprises:
converting a frequency of the reference clock into a system operating frequency;

generating the plurality of delay clock signals by delaying the converted reference clock signal (P-clock signal);

comparing a phase of the first clock signal to phases of the delay clock signals; and
selecting and outputting one of the delay clock signals having the smallest phase difference from the first clock signal by referring to the phase comparison result.

27. The method of claim 26, wherein comparing phases comprises:

comparing the rising edge of the first clock signal to rising edges of the delay clock signals.

28. The method of claim 26, further comprising:

detecting an error on the reference clock signal and/or the first clock signal.

29. The method of claim 28, further comprising

outputting the P-clock signal when the error is detected on the first clock signal.